

WHAT IS CLAIMED IS:

1. A direct current motor comprising:
an armature having a core and coils wound on the core;
magnets arranged to face each other through the armature;
a commutator operatively connected to the coils; and
a brush disposed in sliding contact with the commutator
for shorting each coil during a commutation period to reverse
a direction of current in the coil,
wherein each magnet has an extension at an end thereof
to generate in the coil an induction voltage which counteracts
to the reactance voltage.
2. A direct current motor of claim 1, wherein:
the induction voltage is initially small and gradually
increased as the armature rotates.
3. A direct current motor of claim 2, wherein:
the induction voltage is identical with the reactance
voltage.
4. A direct current motor of claim 1, wherein:
the induction voltage is initially large and gradually
decreased as the armature rotates.
5. A direct current motor of claim 1, wherein:
the extension is shaped to have varying thickness.

6. A direct current motor of claim 5, wherein:
the extension is provided at the end of the magnet in
a direction of rotation of the armature; and
the thickness is gradually increased in the direction
of rotation of the armature.
7. A direct current motor of claim 5, wherein:
the extension is provided at the end of the magnet in
a direction of rotation of the armature, and the thickness is
gradually decreased in the direction of rotation of the
armature.
8. A direct current motor of claim 5, wherein:
the extension is provided at the end of the magnet in
both a direction of rotation of the armature and a direction
of counter-rotation of the armature, and the thickness of one
extension is gradually decreased.
9. A direct current motor of claim 1, wherein:
the extension has an orientation strength different from
that in other part of the magnet.
10. A direct current motor of claim 1, wherein:
the core has a plurality of teeth thereon; and
the extension is provided outside an angular interval
defined by centers of a first tooth and a last tooth of the
teeth around which the coil is wound to be commutated.

11. A direct current motor of claim 1, wherein:
the magnet has a visible member thereon at a position other than a planar surface which is attached to a housing.
12. A direct current motor of claim 11, wherein:
the visible member is a recess formed at an axial end of the magnet.
13. A direct current motor of claim 11, wherein:
the visible member is a colored marking formed at an axial end of the magnet.
14. A direct current motor of claim 11, wherein:
the visible member is provided at a position other than the extension.
15. A direct current motor of claim 11, wherein:
the visible member is provided at a position other than a circumferential center of the magnet.
16. A direct current motor comprising:
an armature having a core and coils wound on the core;
magnets shaped arcuately and arranged to face each other through the armature, each magnet having a main part and an extension, the main part extending over a predetermined angular interval corresponding to an angular interval of winding each coil, and the extension being provided outside of the main part;

and

a commutator fixed to the armature and operatively connected to the coils.

17. A direct current motor of claim 16, wherein:

the extension is provided at an end of the main part in a direction of rotation of the armature to change an amount of magnetic flux passing through the coil thereby to generate an induction voltage in the coil during a period of commutation of the coil.

18. A direct current motor of claim 17, wherein:

the extension is provided to cause the induction voltage to gradually change to counteract to a reactance voltage of the coil during a commutation period.

19. A direct current motor of claim 18, wherein:

the extension is shaped to have varying thickness in the direction of rotation of the armature.

20. A direct current motor of claim 17, wherein:

the extension has an orientation strength different from that in the main part.

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